PN - FR2819560 A 20020719

PD - 2002-07-19

PR - DE20011001165 20010112

OPD - 2001-01-12

TI - Shaft fixing system for impeller wheel with radial thrust esp for turbocompressor has sleeve engaging with wheel hub and shaft spindle

AB - The fixing system for an impeller wheel hub (3) with radial thrust and an uneven weight distribution along its length, mounted on a drive shaft spindle (8), consists of a sleeve (7) with an end flange (15) forming an assembly joint between the hub and spindle. The sleeve surfaces are shaped to engage with the shaft spindle and hub and transmit a rotation from one to the other, and is fixed in place by a long bolt (16) and nut (19). The back (6) of the impeller wheel has a centering projection (13) made in one piece with the hub and shaped to butt against a shoulder (17) on the shaft.

IN - BARTHOLOMA KLAUS

PA - MAN B & W DIESEL AG (DE)

EC - F04D29/26D ; F16D1/08G

IC - F04D29/28 ; F04D29/20 ; F16D1/08

CT - EP0522630 A [A]; US4872817 A [A]; DE19736333 C [AD]; EP0072582 A [AD]

TI - Shaft fixing system for impeller wheel with radial thrust esp for turbocompressor has sleeve engaging with wheel hub and shaft spindle

PR - DE20011001165 20010112

PN - JP2002242884 A 20020828 DW200272 F04D29/22 005pp
- FR2819560 A1 20020719 DW200259 F04D29/28 012pp
- DE10101165 A1 20020725 DW200259 F04D29/20 000pp

PA - (MAUG) MAN B & W DIESEL AG

IC - F01D25/00 ;F02C6/12 ;F04D29/04 ;F04D29/20 ;F04D29/22 ;F04D29/28 ;F16D1/06 ;F16D1/08

IN - BARTHOLOMAE K; BARTHOLOMA K

AB - FR2819560 NOVELTY - The fixing system for an impeller wheel hub (3) with radial thrust and an uneven weight distribution along its length, mounted on a drive shaft spindle (8), consists of a sleeve (7) with an end flange (15) forming an assembly joint between the hub and spindle. The sleeve surfaces are shaped to engage with the shaft spindle and hub and transmit a rotation from one to the other, and is fixed in place by a long bolt (16) and nut (19). The back (6) of the impeller wheel has a centering projection (13) made in one piece with the hub and shaped to butt against a shoulder (17) on the shaft.
- USE - Fixing radial thrust impeller wheel to shaft esp of turbo- compressor.
- ADVANTAGE - Reduced stresses and risk of impeller deformation during service.
- DESCRIPTION OF DRAWING(S) - The drawing shows a cross-section of the impeller an

shaft end in side view.

- Impeller hub **3**
- Back of impeller wheel **6**
- Sleeve **7**
- Drive shaft spindle **8**
- Centering projection **13**
- Sleeve end flange **15**
- Long bolt **16**
- Shaft shoulder **17**
- Nut **19**
- (Dwg. **1/1**)

OPD - **2001-01-12**

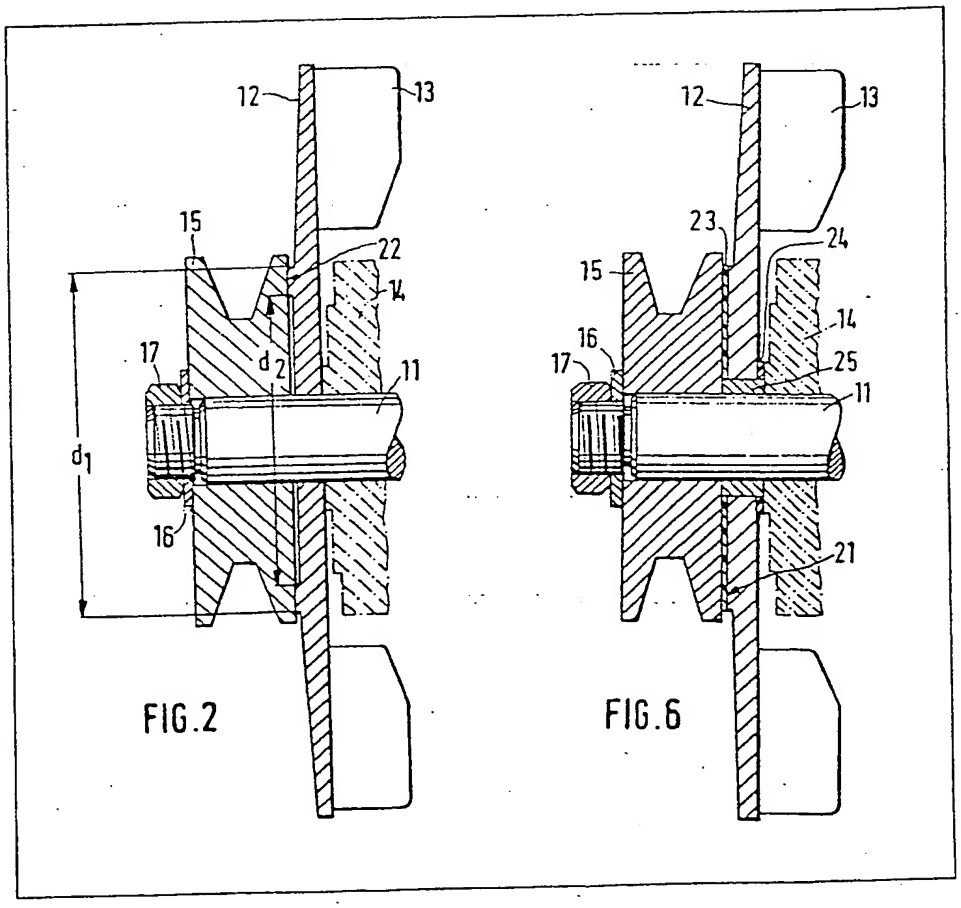
AN - **2002-550985** [59]

(12) UK Patent Application (19) GB (11) 2 031 554 A

(21) Application No 7931340
(22) Date of filing 10 Sep 1979
(23) Claims filed 10 Sep 1979
(30) Priority data
(31) 2839288
(32) 9 Sep 1978
(33) Fed. Rep of Germany (DE)
(43) Application published
23 Apr 1980
(51) INT CL³
F04D 29/20 //
F16D 1/06
H02K 7/14
(52) Domestic classification
F2U 241 343 372 377 378
380 399
(56) Documents cited
GB 1229747
GB 1198962
GB 688364
GB 674340
GB 459425
(58) Field of search
F1C
F2U
H2A
(71) Applicants
Robert Bosch GmbH,
Postfach 50,
7000 Stuttgart 1,
Federal Republic of
Germany.
(72) Inventors
Klaus Dobler,
Hansjörg Hachtel.
(74) Agents
W.P. Thompson & Co.

(54) Air impeller assembly for a rotating electrical machine

(57) An impeller (12) is mounted upon a shaft (11) of a machine, e.g. a motor vehicle alternator, by a nut (17), with locating means comprising a machine element (14) and a pulley (15). A bush (25) and resilient elements (23, 24) may be interposed, by means of which axial shaft vibrations are damped, reducing their transmission to the impeller, thereby minimising noise. Alternatively, non-resilient contact between pulley (15) and impeller (12) may be made through an annular shoulder (22) located between diameters (d_1, d_2) chosen such that the resonant frequencies of the separate members become changed upon assembly, thereby reducing vibration which might otherwise have occurred in use.



GB 2 031 554 A

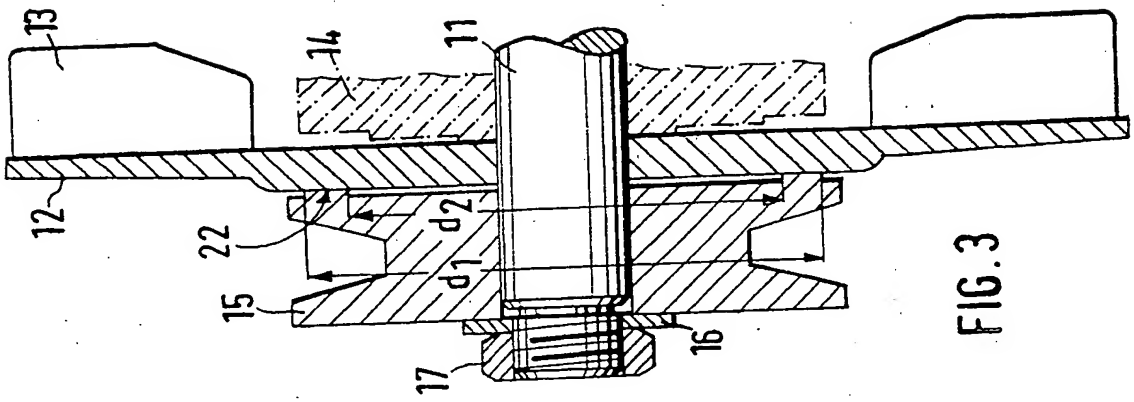


FIG.3

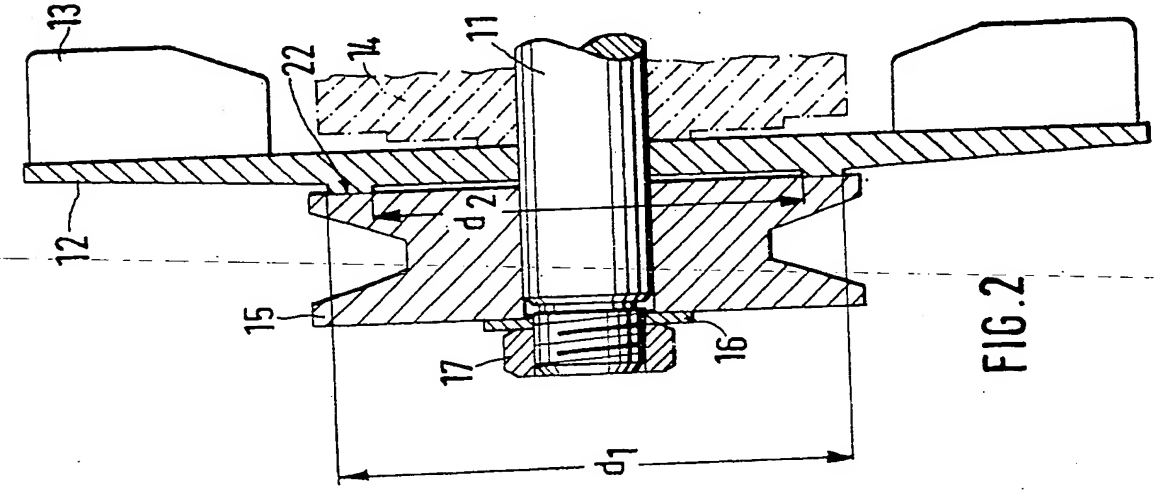


FIG.2

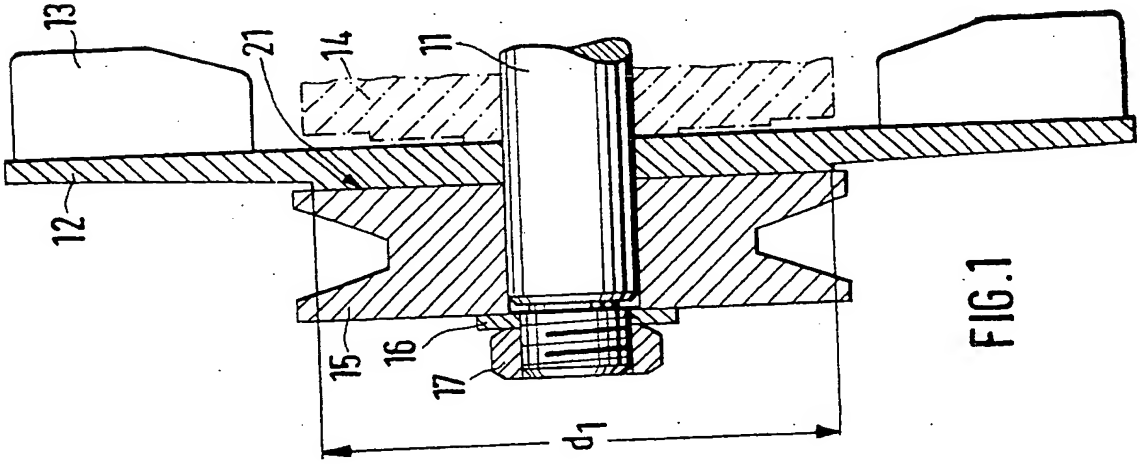


FIG.1

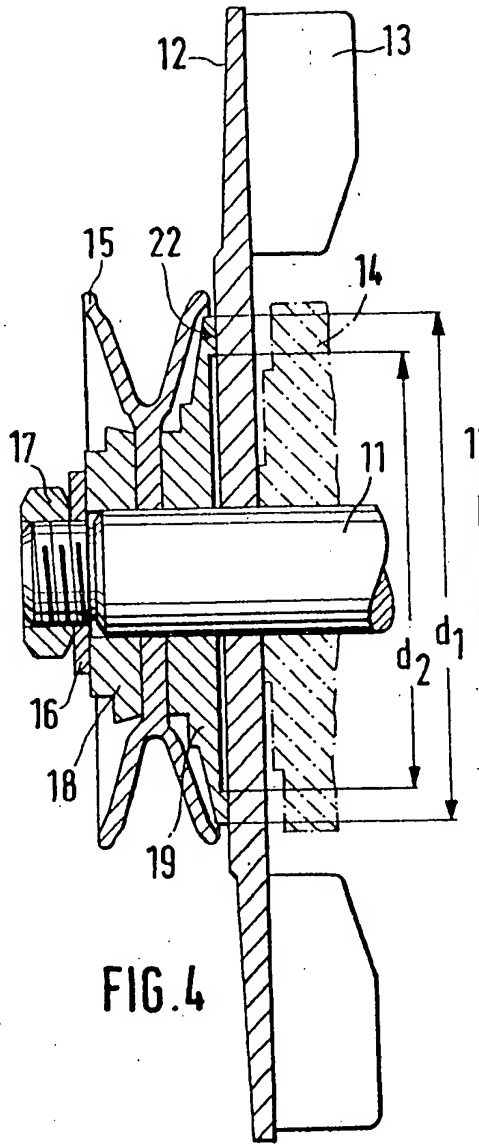


FIG.4

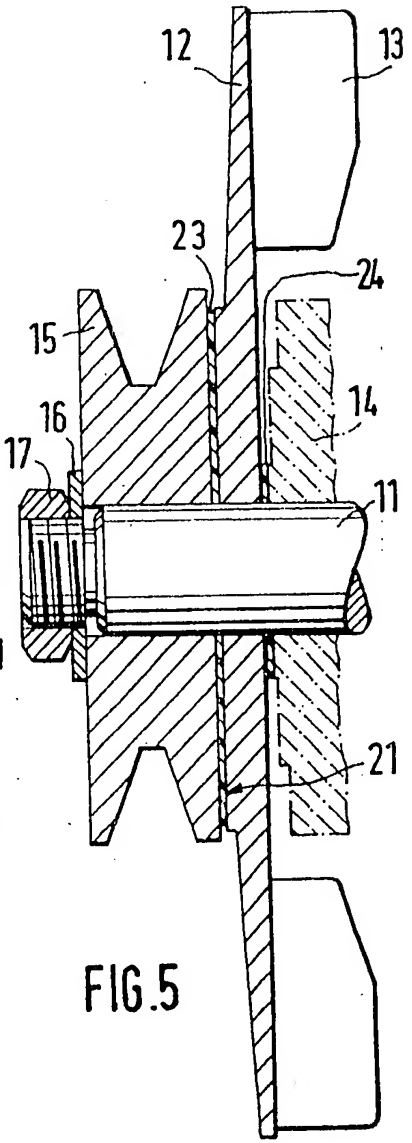


FIG.5

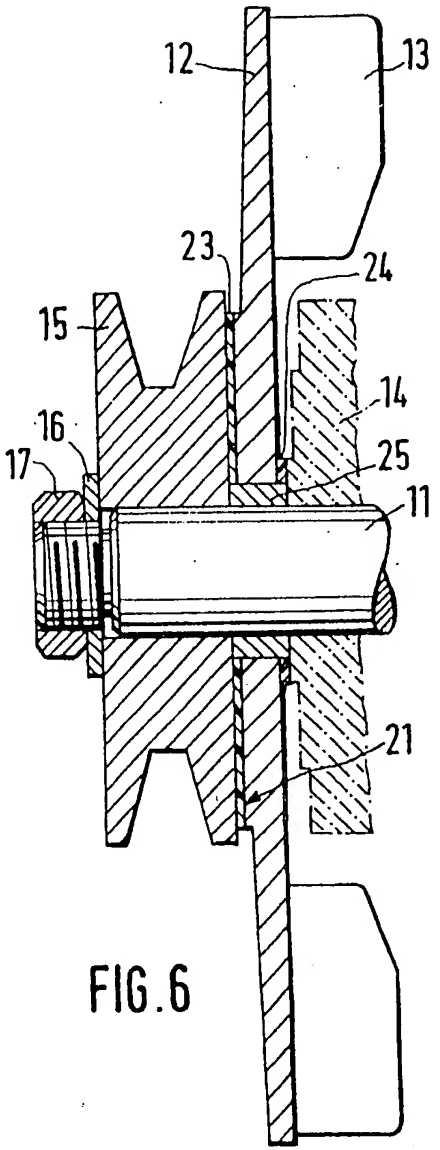


FIG.6

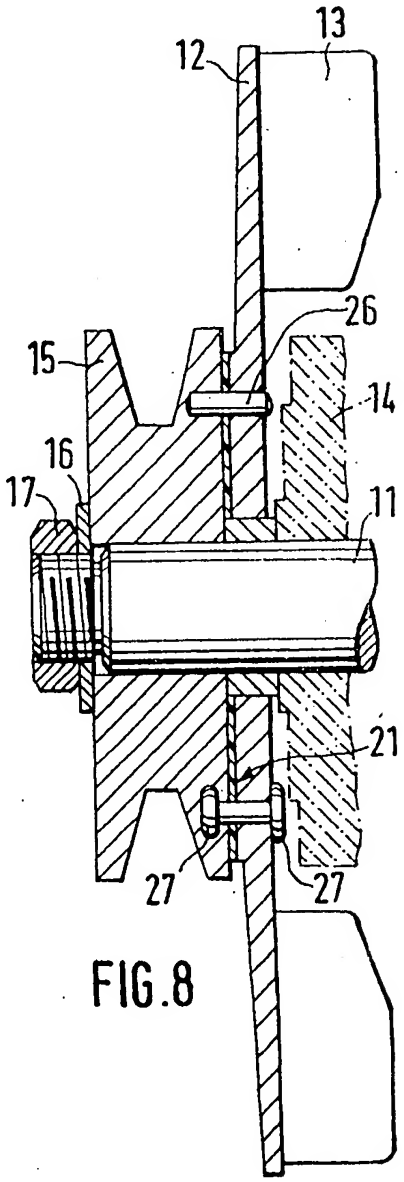


FIG.8

2/3

2031554

the bush 25 and the second supporting disc 19 are combined to form a single member 28, and the impeller 12 is separated from this single member 28 by a resilient interlayer 29.

The length and diameter of the bush 25, and the diameter and thickness of the resilient interlayers 23, 24 and 28, and, if applicable, the pressure of the nut 17, are selected so as to provide an optimal damping effect.

CLAIMS

1. An impeller assembly for rotating electrical machines, comprising the impeller, clamping means for clamping the impeller on the shaft of the machine free from angular displacement thereon; the impeller being provided with a concentric aperture for insertion on the shaft of the machine, and means for supporting the impeller on the machine shaft, wherein the supporting means and if need be, the clamping means are proportionately constructed so as to clamp or pevent the transmission of longitudinal oscillation of the shaft to the impeller.

2. An assembly according to claim 1, for a rotating electrical machine the shaft end of which is screw-threaded, wherein the clamping means is a nut to be screwed on the shaft end.

3. An assembly according to claim 1 or 2, wherein the supporting means are of rigid construction.

4. An assembly according to claim 1 or 2, wherein the supporting means are of resilient construction.

5. An assembly according to any of claims 1 to 4, wherein the contact surface between the impeller and the pulley is of concentric, annular construction, and has a diameter which is accurately selected to match the other dimensions of the impeller and both the impeller and the pulley have a planar surface in the region of the contact surface.

6. An assembly according to claim 5, wherein the width of the annular contact surface is small compared with its external diameter, and it extends substantially in the region of the larger rim of the pulley.

7. An assembly according to claim 6, wherein the contact surface is in the form of a shoulder, and is very small in depth compared with the thickness of the impeller.

8. An assembly according to claim 7, wherein the contact surface is formed on the impeller.

9. An assembly according to claim 7, wherein the contact surface is formed on the pulley.

10. An assembly according to claim 7, wherein the contact surface is formed on a supporting disc which is inserted between the impeller and the pulley.

11. An assembly according to claim 1, 2 or 4, wherein the impeller abuts a first resilient disc, which is inserted between the impeller and the pulley and, where applicable, abuts a second resilient disc, which is inserted between the impeller and further machine elements.

12. An assembly according to claim 11, wherein the impeller and the first resilient disc and, where applicable, the second resilient disc are inserted on a bush which is fitted on the machine shaft.

13. An assembly according to claim claim 11 or 12, wherein between the first resilient disc and the pulley there is inserted a first supporting disc.

14. An assembly according to any of claims 11 to 13, wherein at least one of the lateral surfaces of at least one of the resilient discs is mechanically rigidly attached to the respective contact surface.

15. An assembly according to any of the preceding claims, wherein at least one driver element serves as a support means for the prevention of angular displacement.

16. An assembly according to claim 15, wherein the driver element is provided with at least one enlargement for additional securing the pulley in the axial direction of the machine shaft.

17. An assembly according to any of claims 12 to 16, wherein the bush and a supporting disc are integrally formed.

18. An assembly according to claim 17, wherein between the integrally-formed bush/supporting disc member and the impeller there is provided a resilient interlayer.

19. An impeller assembly substantially as hereinbefore described with reference to Figures 1, 2, 3, 4, 5, 6, 7, 8 or 9 of the accompanying drawings.

Printed for Her Majesty's Stationery Office by Croydon Printing Company Limited, Croydon Surrey, 1980.
Published by the Patent Office, 25 Southampton Buildings, London, WC2A 1AY, from which copies may be obtained.